



## **DEPARTMENT OF HEALTH AND HUMAN SERVICES**

### **National Institutes of Health**

#### **Government-Owned Inventions; Availability for Licensing**

**AGENCY:** National Institutes of Health, HHS.

**ACTION:** Notice.

**SUMMARY:** The invention listed below is owned by an agency of the U.S.

Government and is available for licensing to achieve expeditious commercialization of results of federally-funded research and development. Foreign patent applications are filed on selected inventions to extend market coverage for companies and may also be available for licensing.

**FOR FURTHER INFORMATION CONTACT:** Peter Soukas, J.D., 301-594-8730; [peter.soukas@nih.gov](mailto:peter.soukas@nih.gov). Licensing information and copies of the patent applications listed below may be obtained by communicating with the indicated licensing contact at the Technology Transfer and Intellectual Property Office, National Institute of Allergy and Infectious Diseases, 5601 Fishers Lane, Rockville, MD, 20852; tel. 301-496-2644. A signed Confidential Disclosure Agreement will be required to receive copies of unpublished patent applications.

**SUPPLEMENTARY INFORMATION:** Technology description follows.

#### **Epstein-Barr Virus Antibody That Blocks Fusion And Neutralizes Virus Infection Of B Cells**

##### **Description of Technology:**

Epstein-Barr virus (EBV) is the most common cause of infectious mononucleosis and is associated with nearly 200,000 cancers and 140,000 deaths each year. EBV-associated cancers include Hodgkin's lymphoma, non-Hodgkin's lymphoma, Burkitt B cell lymphoma, and EBV post-transplant lymphoproliferative disease. The latent reservoir

for EBV in the body is the B lymphocyte. Thus, blocking B cell infection is important for reducing EBV-related disease.

EBV can infect both B cells and epithelial cells; however, the method of entry differs between these two cell types. To initiate B cell infection, EBV glycoprotein 350 (gp350) binds to complement receptor 2 (CR2; also known as CD21), followed by binding of glycoprotein 42 (gp42) to HLA class II molecules, which triggers fusion of EBV with the B cell, allowing virus entry into the cell. Fusion also requires the EBV proteins gH/gL, which are found complexed with gp42 as a heterotrimer, and gB. Infection of epithelial cells is initiated by the binding of the EBV protein BMRF2 to cellular integrins, followed by binding of gH/gL to ephrin receptor A2 and integrins, which triggers fusion by EBV gB.

Monoclonal antibodies that specifically bind EBV gp42 are described by this invention. The gp42-specific antibodies are capable of neutralizing EBV infection and inhibiting fusion of EBV with B cells. The monoclonal antibodies can be used for the treatment or prophylaxis of EBV infection, prevention of EBV-associated disease or infection in immunocompromised subjects, diagnosis of EBV infection, and detection of EBV in a biological sample.

This technology is available for licensing for commercial development in accordance with 35 U.S.C. § 209 and 37 CFR Part 404, as well as for further development and evaluation under a research collaboration.

**Potential Commercial Applications:**

- Viral diagnostics
- Viral therapeutics
- Viral prophylaxis
- Vaccine research

**Competitive Advantages:**

- Ease of manufacture
- Strongly neutralizing antibodies
- Alternative to EBV vaccines

**Development Stage:**

- In vivo data assessment (animal)

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**Intellectual Property:** HHS Reference No. E-020-2020-0 - U.S. Provisional Application No. 62/979,070, filed February 20, 2020

**Licensing Contact:** Peter Soukas, J.D., 301-594-8730; [peter.soukas@nih.gov](mailto:peter.soukas@nih.gov).

**Collaborative Research Opportunity:** The National Institute of Allergy and Infectious Diseases is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, or commercialize for development of a vaccine for respiratory or other infections. For collaboration opportunities, please contact Peter Soukas, J.D., 301-594-8730; [peter.soukas@nih.gov](mailto:peter.soukas@nih.gov).

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Surekha Vathyam,

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Technology Transfer and Intellectual Property Office,

National Institute of Allergy and Infectious Diseases.